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Tindall: Water Stability Linked to Homeland Security

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Water security may not grab headlines, but is certainly a beneath-the-surface homeland security issue that will need to be addressed in coming years as nature and terrorism pose threats to supply.

That is part of the message from a November 2010 U.S. Geologic Survey (USGS) Fact Sheet co-authored by James Tindall, a 2006 graduate of the Naval Postgraduate School Center for Homeland Defense and Security. Tindall wrote the fact sheet along with Andrew Campbell, a former Australian intelligence analyst specializing in Jihadist and terrorist deception techniques.

Tindall, who has written extensively on water-security issues, took time to explain how water supply and security are homeland security issues:

Water affects or is incorporated into every facet of our lives, from energy generation to manufacturing processes. As a tier one critical infrastructure, water along with energy, it represents increased economic development within a nation, or lack of it, can represent substantially decreased economic development or, total collapse of a country and continuity of government. Without water or when it is very scarce, everything falls apart. As an example, a lack of water can increase food, commodity, and energy prices due to reduction in agricultural production and lack of adequate supplies for energy production for hydroelectric processes. For the latter we can use Hoover Dam as an example. Hoover Dam supplies water for 22 million people and electricity for 7 million users; if water levels fall low enough in the reservoir due to sustained drought or other reasons, electricity cannot be made by the dams turbines – the lost electricity will either need to be obtained elsewhere or the users who typically get that electricity would need to move toward rolling blackouts for conservation reasons; much like has happened during the last decade in California. Even now, Lake Meade, which is the reservoir held back by Hoover Dam, is at historic water-level lows. And, it takes 2-years annual flow of the Colorado River to fill Lake Meade without withdrawals of any kind. Since a large portion of Los Angeles' electricity comes from the Colorado River we could be on the verge of historic dire events, perhaps a Black Swan event in the making.

From a homeland security perspective, water security represents a net assessment of synthesized infrastructures as generally discussed in critical infrastructure protection (CIP) issues, but at a more strategic level because the cascading failures involved are not readily seen by CIP industrial experts and are at an increased degree of governance and policy. Water security, due to its national and global significance and scope, is a true all-hazards approach by the triad of hazards, i.e., manmade (terrorist), natural, and technological. In terms of billion dollar infrastructures, both terrorist and technological hazards can be extreme, but also those caused by catastrophic natural events such as earthquakes. If, for example, a large earthquake hit near Los Angeles, it could rupture the Colorado River aqueduct with a loss of water supply of about 30-50 percent. The quake also could sever surface conveyance pipes on a wide scale. Such an event could cause mass civil unrest.

Congress has designated the Department of Homeland Security as the lead agency in responding to terrorist attacks and natural disasters, but technological hazards such as SCADA controls and cyber hacking have also evolved as a central part of that mission. I believe that often, the reference to security in terms of physical gets in the way. It should be noted that security here does not refer only to guards, gates, and guns, but generally to sustainability and continuity of operations. This requires adequate safeguards, regulations, strategies, and policies that are properly and efficiently implemented. But, which are difficult due to lack of broad-scope vision.

For example, let's go back to Hoover Dam. Can a terrorist attack take it out? Yes! It could be done conventionally or with a bio attack – details are unnecessary. Thus, preemptive mitigation is a must because there is no redundancy

for this system. Consequently, it is not enough just to think of critical infrastructure and possible failures, attacks, etc. There must be a synthesis of the whole, which only an agency such as DHS and those cooperating with it have the capacities and capabilities to accomplish.

Let's look at a small synopsis:

DHS has an idea of the consequences of loss of an infrastructure such as Hoover Dam, which may go something like this should the dam be lost:

Total infrastructure collapse leaves 22 million without water and 7 million without energy; in turn massive civil unrest erupts; public health issues arise, such as dysentery; 25 percent of U.S. economy affected; transportation logistics are drastically modified and the event becomes a national security concern immediately that will be far reaching and longer-term.

Many steps are missing, but you get the basic idea. DHS' role would be to synthesize the process as a whole, not from merely a CIP perspective, but an overall risk mitigation and assessment issue by coupling CIP with resources security, infrastructure assets, merging intelligence capacities (figure 4 in report is a glimpse) – especially counter intelligence, and law enforcement efforts (see report of Mohamed Atta scouting Hoover Dam) for detection, prevention and response; coupling resource data and the flow of resources and commodities related to specific infrastructures would become a component part as well. These activities would all be merged with Science and Technology, mission directorate, policy and governance, and even economic issues and response. For example, what would happen economically as a result of such an event? How would DHS anticipate that? Current mechanisms do not seem to project or think that far ahead, but they should. Therefore, I believe DHS' role is to synthesize the whole, not concentrate on the myopic, despite the overall complexity.

As a comparison to a country with a lack of water, let's look at Afghanistan; it has recently been discovered to have over a trillion dollars in natural metals, and other resources. Given its water capacity, which is minimal, how can these metals be extracted? Minimally at best. Why? At present, the bulk of urban and rural water supplies for domestic and other municipal purposes are obtained from ground water sources, e.g. springs, karezes, and manmade wells. Surface water supplies from the Kunar River (originating in Pakistan), the Kabul River (which flows into Pakistan downstream), and the Helmand River for which a discharge treaty was signed in the 1970's to give 26 m/s of Helmand River water all year round into Iran. All three rivers have been left reeling from the 2003 and 2006 droughts. These rivers also supply about 85 percent of the water used for agriculture in the country. This has resulted in minimal country-wide infrastructure development. Thus, what would the consequences of such resource extraction be with neighboring states? On foreign policy? National or International security?

The Delaware Aqueduct that supplies water to New York City, as well as the Sacramento Levee Systems and Clifton Court Forebay that transport water to Southern California from the northern part of the state, are more examples. These water systems are precarious at best in terms of potential failure and vulnerability, but which could have devastating consequences on national security.

Too often we look at the infrastructure and not the resource, but that is a mistake because the infrastructure is merely a mechanism of conveyance for the resource. Similarly, we look only at terrorists, their links, modus operandi, etc. Likewise, too often we fail to consider what the terrorists are trying to accomplish – not that they are just trying to make a point by destroying a particular thing, but why they are destroying that particular thing. If we focused more on the latter, DHS' job could be easier, but also more synthesized and effective. So, DHS would couple resources and data, infrastructure, terrorists and their capabilities, and all intelligence processes to name a few, into one system and look at them as a whole rather than singularly. This requires better synthesis, but also more expertise in cascading effects over multiple, non-singular components. This is the drive behind the water-security issue – to synthesize multiple programs and capacities across missions in a growing complex environment.